

ARIZONA ENERGY STORAGE POLICY

STORAGE POLICY SNAPSHOT

Does Arizona have an renewables mandate?	YES; 15 percent by 2025
Does Arizona have a state mandate or target for storage?	NO
Does Arizona offer financial incentives for energy storage development?	NO
Does Arizona have a policy for the strategic deployment of Non-Wires Alternatives or Distributed Energy Resources to defer, mitigate, or obviate the need for certain T&D investments?	NO
Does Arizona have a policy addressing multiple use applications for storage?	NO
Does Arizona have a policy on utility ownership of storage assets?	NO
Does Arizona allow or mandate the inclusion of energy storage in utility IRPs?	YES
Has Arizona modified its permitting requirements specific to energy storage?	NO
Does Arizona allow customer-sited storage to be eligible for net metering compensation?	UNCLEAR
Has Arizona revised its rate structures to drive adoption of behind-the-meter storage?	NO
Approximate development of storage capacity in Arizona	?

STORAGE POLICY ASSESSMENT

Arizona is an interesting state to follow given its unique approach toward both the tactical development of an energy storage marketplace and the creation of energy storage policies to drive and define such a marketplace. Among the group of approximately 15 states that have witnessed a significant growth in energy storage development and/or created energy storage policies at either the state legislature or public regulatory commission, Arizona remains unique in that its energy storage marketplace has been advanced primarily due to utility initiatives as opposed to policy directives. In all other states, it can be argued that policy has driven market development, either through outright mandates for energy storage (e.g., California, New York) or advantageous incentives that have subsidized the exploration of storage technologies. Not so in Arizona. The state's energy storage marketplace has continued to develop in spite of a near-total absence of policy guidelines; and despite this absence of policy directives, growth to date of energy storage initiatives in Arizona has been noteworthy and its potential for future growth is massive.

Storage technologies and utility-driven storage deployments continue to gain momentum in Arizona, while policymakers play "catch up" to develop appropriate rules and regulations. This approach has been thwarted at times due to conflicts among the state's policymakers and disagreements regarding which state agency (the governor's office, the legislature, or the Arizona Corporation Commission) should take the lead role in defining energy storage policy in the state.

Arizona's unorthodox approach is likely due to several distinguishing factors that simultaneously make the Grand Canyon State inherently unique and a benchmark for other states to be evaluated against. In other words, the factors that make Arizona unique also make it a testing ground for how to create an energy storage marketplace "from scratch." Consider the following dichotomies that exist within Arizona, which have caused the energy storage marketplace in the state to experience growth in a series of fits and starts.

- Arizona is one of the sunniest states in the country, with some areas of the state having 300+ days of sunshine in an average year. Thus, Arizona's potential for solar power is enormous.
 - **AND YET,** Arizona still gets only about 6 percent of its energy from solar power. More than 50 percent of Arizona's power continues to come from fossil fuels and fracked gas, most of which ends up being transported to other states like California. The state's low levels of overall usage of solar power relative to other states, particularly in its own region, means that even with their aggressive approach toward renewables development Arizona's utilities are still behind the curve when it comes to moving toward a carbon-free marketplace.
- Despite being an exporter of power to neighboring states, Arizona does not participate in any regional transmission organization (RTO). The oversight to run a central energy

market, provide reliability services and assure operating reserves to prevent power blackouts is arguably a level of oversight that is beyond the capability of Arizona's state regulators.

- **AND YET**, although Arizona continues to operate in a rather isolated manner, its dependence on access to outside markets moves it increasingly closer to participation in an RTO, which due to geographical local would likely be the California ISO. If it were to participate in an RTO, Arizona's energy market would increasingly fall under federal jurisdiction, which would create its own layers of complexity. The decision of RTO participation is further complicated by concerns about the available transmission lines that connect Arizona to neighboring states. A lack of transmission capacity would limit Arizona's ability to export and import power from other states, thereby deepening its need for resource self-sufficiency through renewables and energy storage.
- Arizona was the first U.S. state, in 2006, to require utilities to get a certain percentage of their power from renewable resources, specifically 15 percent by 2025.
 - **AND YET**, Arizona presently falls last among its neighbors in terms of renewables mandate. By comparison, Nevada and New Mexico have adopted a 50-percent requirement; Colorado has a 30-percent-by-2020 requirement; and California's RPS is 60 percent by 2030. Efforts to increase the state's renewables requirement (including public ballot initiatives such as 2018's Proposition 127) have failed, mostly due to concerns about how an increased renewables target would result in increased costs for end-use customers
- Arizona is in the midst of a contentious "turf war" between the state's executive and legislative branches regarding the policy oversight of its energy sector. Arizona's constitution uniquely establishes the ACC as a separate entity outside of the legislative and executive branches. The governor believes that the ACC's role should be limited to setting rates and its recent move into setting new renewables targets represents an inappropriate and unwanted "mission creep." The ACC says its responsibilities are unambiguous and include the oversight of the state's investor-owned utilities, including their generation mixes.
 - **AND YET**, the conflict continues...which leaves Arizona in somewhat of a "policy paralysis" with regard to setting new renewables, energy storage, or clean energy policy. Having the Legislature — presumably with the governor in the driver seat— setting energy policy for the state would potentially create a conflict with the specific powers given to the ACC under the Arizona Constitution. The ACC believes it has the power to enact and enforce rules over its sphere of influence just as if it were acting as the Legislature. Whether or not a compromise can be reached remains unclear.

- Arizona continues to wrestle with the question of energy competition or “deregulation,” which would open its generation market to independent providers.

AND YET: If deregulation were to include a separation between transmission & distribution responsibilities from generation, the question of potential utility ownership of storage assets would be further complicated.

Despite all these systemic challenges, the largest utilities in Arizona—Arizona Public Service (APS), Tucson Electric Power (TEP) and Salt River Project (SRP)—have all pursued renewables and energy storage on their own. Unlike APS and TEP, SRP is not under the jurisdiction of the ACC, but despite this difference all three utilities have been aggressively pursuing renewables and storage development, as illustrated by the following: the

- APS has been viewed as an “early adopter” of battery storage technologies and publicly stated its intent in February 2019 to install over 850 MW of energy storage by 2025. APS’ storage strategy is built upon three core initiatives:
 - The first initiative includes upgrading scale solar plants across the state with 200 MW of battery storage. APS has already selected Invenergy to install 141 megawatts of new battery systems at six solar sites, with the first expected to begin service by the summer of 2020.
 - The second initiative is APS’ plan to build an additional 500 MW of battery storage and at least 100 MW of solar resources by 2025.
 - The third initiative has APS pursuing shorter term power purchase agreements with natural gas providers (e.g., a 7-year contract as opposed to the more typical 20-year contract). Shorter contracts are intended to provide APS flexibility to take advantage of clean energy technologies as they continue to mature.
- TEP added two 10-MW battery systems within the last year:
 - A lithium nickel-manganese-cobalt storage system at a TEP substation near Interstate 10 and West Grant Road, built by a subsidiary of NextEra Energy Resources
 - A 10-MW lithium titanate oxide storage facility linked to a 2-MW solar array at the UA Tech Park southeast of Tucson, built by E.ON Climate & Renewable
- SRP has started construction with AES Corporation for the SRP’s first standalone battery-based energy storage project. The 10-MW, four-hour duration energy storage solution, to be supplied by Fluence, is intended to provide peaking capacity support. Under the 20-year agreement, AES will provide SRP with 10 MW, 40 MWh battery based energy storage system.

Meanwhile, Arizona is also home to what have been two widely publicized fires and explosions at battery-powered plants, highlighting the challenges and risks that can arise as utilities rely more heavily on battery storage. APS had installed a 2 MW battery system at a substation in Surprise, AZ, just outside of Phoenix, and another near the Festival Ranch development in

nearby Buckeye. But an April fire and explosion sent eight firefighters and a police officer to the hospital. An investigation into the causes of the event is ongoing, but it appears that

In response to the fire and explosion, APS announced that would be temporarily delaying its investments in new battery storage, although it will still issue two requests for proposals to add up to 250 MW of wind generation to its portfolio no later than 2022 and 150 MW of solar power to its portfolio by 2021.

EXECUTIVE DIRECTIVES

When compared to neighboring states New Mexico and California, Arizona has not witnessed clear and consistently expressed support for energy storage through its executive leadership. The state's last energy plan was written in 1990, and since that time very little has been done through executive leadership to revise existing policies regarding Integrated Resource Planning, Renewable Energy Standards, or Net Metering Rules, all of which relate to energy storage but have not been addressed in a number of years and when addressed it was in separate proceedings. Further, there are no clean-energy rules that have been incorporated into the Arizona Constitution. In fact, directives issues by the state's executive leadership over the last decade has been largely geared toward limiting the development of renewable power rather than enabling or encouraging it.

For instance, former Arizona Governor Jan Brewer (R), who served from 2009 to 2015, was responsible for several initiatives that arguably complicated the development of a clean-energy market in the state, including repealing clean car emissions to lower emissions, opting out of the Western Climate Initiative, and signing legislation that prohibited the Arizona Department of Environmental Quality from reducing greenhouse gas emissions unless authorized to do so by the Arizona Legislature. Furthermore, during Brewer's tenure as governor, the ACC pursued litigation in protest over the Clean Power Plan, issued by the Obama Administration, which would have required emission reductions from power plants across the country and enact restrictions regarding the use of coal-fired power. The Clean Power Plan was subsequently put on hold and its future prospects are doubtful under the Trump Administration.

In fairness, Gov. Brewer did issue in 2014 an Executive Order adopting the state's Master Energy Plan, officially known as "emPOWER Arizona: Executive Energy Assessment and Pathways," which was a collaborative effort by the Governor's Office of Energy Policy, Arizona Commerce Authority, Arizona Legislature, the ACC, and leading industry partners. The Plan identified five following executive-level goals:

1. Increase solar energy development through best practices and leading by example;
2. Educate the next generation of energy professionals;
3. Make Arizona a leader in energy-sector workforce development;
4. Foster statewide coordination to reduce energy consumption; and
5. Establish an energy advisory board.

Energy storage was included in the Plan, but since 2014 storage technologies have matured and prices have decreased, making many of the observations included in the Plan outdated. For instance, the Plan stated the largest challenge associated with energy storage to be as follows: “While there have been different attempts to establish energy storage to balance the system, these attempts have not been scalable due to costs and broad distribution of research funding. Currently, federal monetary resources are insufficient for meaningful research to create scalable energy storage technologies.”

In addition, Brewer was responsible for awarding seven Arizona renewable energy companies more than \$2.7 million in subsidies to advance their operations.

Arizona’s current Governor Doug Ducey (R), who assumed office in 2015, has not issued any clear policy directives on renewables, energy storage, or broader clean energy initiatives. In fact, Ducey has declined to even sign a pledge to meet the Paris Climate Accord emissions reductions agreement, has supported the U.S. decision under President Trump to cease all participation in the [2015 Paris Agreement](#) on climate change mitigation, and has opted not to participate in the alternative, U.S.-led Climate Alliance. In immediate response to President Trump’s decision to withdraw from the Paris Agreement, the governors of California, New York, and Washington founded the United States Climate Alliance, pledging to uphold the Paris Agreement within their borders. Other states soon followed (e.g., Colorado, Connecticut, Hawaii, Oregon, Massachusetts, Rhode Island, Vermont and Virginia), but Arizona has opted not to join this Agreement.

Since taking office Gov. Ducey has been primarily focused on restraining the state regulators’ efforts to regulate APS and TEC beyond rate design, which is the one clear responsibility assigned to the ACC under the state’s constitution. Ironically, much of the efforts to expand the ACC’s role (or simply execute what are believed to be its inherent responsibilities) have stemmed from former ACC commissioner Andy Tobin, whom Gov. Ducey appointed in 2015. (Note that ACC Commissioners are to be elected per Arizona law, but appointments can be made to fill a vacant spot with the intention that the appointed commissioner will subsequently have to win election to retain their seat on the ACC).

In 2018, Commissioner Tobin announced that he would be proposing a “series of reforms” contained within his Energy Modernization Plan (see the Regulations section below for more details). Although not captured in an official executive order, Gov. Doug Ducey (R) has publicly expressed concern that the ACC “has been getting into areas beyond its constitutional authority to set utility rates” and exhibiting a “bit of mission creep.” Specifically, the governor has commented that the ACC may be overstepping its bounds in telling utilities in the state how much of their power has to originate from renewable energy. The ACC has pushed back by stating that it has rule-setting authority to establish rules that utilities in the state must follow. “We want to see the ACC doing what their constitutional charge is,” Ducey said. But that, he said, does not mean the elected regulators should have the last word.

Against this “turf war” over energy policy, Arizona has not seen its executive leadership drive the development of clean energy reforms, as has been the case in most other Western states.

LEGISLATION

As with an absence of executive directive, Arizona has also witnessed an absence of legislative policy that would clearly define its energy storage market. At this time, there is no single piece of legislation that has been introduced or enacted in Arizona that defines clear policy principles for energy storage in the state. The one piece of recent legislation that has touched upon policies related to energy storage resulted from, or developed out of, a utility-driven campaign to mitigate a public ballot initiative in 2018 that would have increased the state’s renewable requirements placed upon utilities, and ultimately failed. The legislation must be viewed from the lens of what it was attempting to avert rather than direct.

In November 2018, an initiative known as Proposition 127 (official name was the Arizona Renewable Energy Standard Initiative” or “Clean Energy for Healthy Arizona”) was included on the general election ballot. Proposition 127 was a proposed constitutional amendment that would have required investor-owned utilities and cooperatives to obtain 50 percent of their power from renewable resources (a significant increase from the existing renewables requirement put into place in 2006, requiring 15 percent by 2025). Most reports indicate that the state’s IOUs already have met their renewables mandate.

Backed by APS, the opposition to Proposition 127 argued that the initiative would drive up utility bills, cause reliability problems, and force APS to close Palo Verde, the nation’s largest nuclear plant. Further, the utility’s parent company Pinnacle West publicly characterized the initiative as a reckless attempt to force unrealistic California-style renewable energy goals on utility customers in a desert climate where reliable electricity for air conditioning is a necessity.

In response to the ballot measure and the prospect that it might pass, Gov. Ducey signed House Bill 2005 in March 2018, which was intended to mitigate the impact that passage of Proposition 127 might have on the state’s IOUs and cooperatives.

The key provisions of HB 2005 include:

- Would fine electric utilities that violate the new renewable energy standards (had they passed under Proposition 127).
- Fines would be between \$100 and \$5000.
- While imposing a fine for non-compliance on the state’s utilities, in practice HB 2005 would have made violating the initiative, which again failed at the ballot, a low-risk prospect for utilities in the state due to the low-level fines.

There are presently no other pieces of legislation that address energy storage under consideration by the Arizona Legislature.

REGULATIONS

Similar to the absence of executive directives and legislative policy pertaining to energy storage, Arizona has also witnessed a lack of regulatory policy on energy storage as well. While there has been some discussion of energy modernization plans by individual commissioners on the ACC, a formally adopted decision related to energy storage in the state has not occurred as of yet.

For context, the ACC was created by the Arizona Constitution and has jurisdiction over public service corporations, including investor-owned utilities such as APS and TEP as well as electric cooperatives. The primary responsibility of the ACC is to set electric rates of the state's regulated utilities. In addition, prior court proceedings in the state ruled that the ACC also has authority to decide what mix of energy sources utilities in the state are required to use. As previously noted, SRP is not regulated by the ACC.

The ACC is comprised of five commissioners who are elected to their positions; Arizona is one of only 12 states that have elected public utility commissioners; the other 38 states have appointed public utility commissioners.

In 2010, the ACC issued an order related to energy efficiency that tangentially related to energy storage, the development of which would begin to accelerate both nationally and regionally at around the mid-point of the decade Docket No. RE-00000C-09-0427 (Decision # 71819) established a goal of a 22-percent reduction in energy consumption among regulated utilities by 2020.

The ACC has also encouraged the adoption of energy storage technologies through requirements placed directly on individual utilities. For example, distinct from a statewide procurement mandate, the ACC ordered APS to develop a \$6 million residential demand response / load management program to facilitate residential energy storage.

By far the most vocal member of the ACC over the last decade has been Andy Tobin, who was appointed to the ACC in 2015. Tobin publicly stated that the "lack of clear energy policy [in Arizona] has resulted in each utility using their own strategies as the guiding principles in developing their own integrated resource plans," which in Tobin's and other commissioner's opinions continued to rely too heavily on natural gas. This sentiment was manifested in the ACC's rejection of IRPs from both APS and TEP.

Key regulatory initiatives in Arizona that occurred during the Tobin era at the ACC included:

E-00000V-15-0094 (March 2018)

- The ACC decision established that a load serving entity may not procure by purchase, acquisition, or construction a generating facility of natural gas energy of 150 MW of capacity or more.

- The order effectively barred APS and TEP from buying or constructing new gas-fired plants with generating capacities of 150 megawatts or more.
- The order was subsequently extended to August 1, 2019.
- The ban also does not apply to contracts the utilities sign to buy power gas plants owned by independent power producers.
- The order also required the utilities to submit detailed studies of alternative energy storage options and petition for approval before mounting plans for any new gas plants.

Simultaneous to the March 2018 Order, it became publicly known that Commissioner Tobin intended to release his own “Energy Modernization Plan” that would seek to completely overhaul the ACC and place new requirements on regulated utilities for renewables procurement and energy storage development. Specifically, Tobin’s Plan included the following provisions:

- Require utilities to source 80 percent of their electricity from zero-emissions sources (namely, renewables and nuclear) by 2050, referred to as a “Clean Peak Standard.”
- Require a collective deployment of 3,000 MW of energy storage by 2030.
- Direct the ACC to begin reforming the utility IRP process, pushing utilities to add more targeted analysis of clean energy into their generation plans.
- Direct utility regulators to devise a new energy efficiency program within 120 days to meet the goal of the new energy standard
- Direct utilities to propose electric vehicle (EV) charging programs for new and existing homes, commercial and industrial customers, and on major freeways.
- Direct the procurement of 60 MW of biomass energy to aid in Arizona’s efforts to thin forest underbrush.

Commissioner Tobin’s tenure on the ACC ended in March 2019 with Tobin’s resignation amid accusations from his fellow commissioners of a “definite breach of ethical standards” due to inappropriate contact that Tobin reportedly had with APS during a pending rate case. The vacancy on the ACC created by Tobin’s departure was filled by Governor Ducey’s appointment of Lea Marquez Peterson, who will have to seek election for a four-year term in order to retain her position.

Since Tobin’s departure from the ACC, we have not seen any significant, storage-specific dockets or decisions coming out of the ACC, with the exception of policies that appear to be emerging under the leadership of ACC Commissioner Sandra Kennedy, who has called for a regulatory order requiring that 50 percent of all energy generated by regulated utilities come from renewable resources by 2028. Unlike Tobin’s Plan, Kennedy’s Plan would not include nuclear energy as a renewable resource. Further, Kennedy’s Plan directly calls for an increase in the carve out for distributed energy from the current requirement of 30 percent to an updated 50 percent of all renewable generation. It is unclear whether Commissioner Kennedy’s Plan will advance.

Docket No. RU-00000A-07-0609 (2019)

- The proposed rules regarding interconnection requirements are intended to make the installation of grid-connected renewable-energy and battery systems easier and cheaper, the Arizona Corporation Commission has preliminarily approved a long-awaited set of rules governing how such off-grid power sources connect to state-regulated utilities.
- The proposed rules offer a streamlined “super fast track” process for approval of systems with a maximum rated generating capacity of 20 kilowatts or less, a fast-track process for systems of less than 2 megawatts and a longer “study track” process including in-depth facility studies for projects greater than 2MW.
- The rules also include measures to make sure distributed generating systems don’t adversely affect reliability or system and worker safety.
- While Arizona is late compared to other states with regard to the adoption of statewide interconnection standards, the rules do have the benefit of having considered new technologies, including battery storage, and how they will interconnect to the grid in Arizona. .
- APS and TEP have been connecting customer-owned rooftop solar and wind systems for years, but have been doing so based on independent renewable energy compliance plans
- The proposed rules will set statewide standards for interconnection of such distributed generating systems and include provisions for emerging home battery storage systems.

Moreover, as 2019 comes to a close, the ACC also is entertaining the idea of re-introducing the concept of electric competition (or “deregulation”) in the state of Arizona. The state had explored the concept of deregulation in the 2000s but discontinued those discussions in the wake of the California energy crisis that occurred in 2002. The resurrected concept of deregulation in Arizona would allow new suppliers to compete with existing utilities for the generation of power, giving end-use customers a choice in their power supplier. If it were to follow a common model, deregulation in Arizona would likely allow utilities to maintain power lines and responsibility for delivering power to end-use customers. However, the utilities would also likely be required to divest of any generation assets they own and would call into question whether the utilities in Arizona would be allowed to own storage assets.

THE FUTURE OF ENERGY STORAGE IN ARIZONA

While Arizona continues to vet broader energy regulation issues (e.g., role of the ACC, increased renewables requirements, deregulation), the absence of energy storage policy in the Grand Canyon State persists. There are a number of issues pertaining to energy storage that the ACC (and potentially the Arizona Legislature) will need to consider as utilities in the state continue to pursue their own storage initiatives.

There are several opportunities for developing supportive state policies:

1. Finalize interconnection policies to ensure that storage can connect to the grid
2. Consider whether a energy procurement mandate is appropriate for the state, similar to what has been enacted in neighboring states.
3. Introduce proceedings to evaluate the value of energy storage and consider multiple use applications (MUAs) for storage that would include varying value levels.
4. Determine whether Arizona's generation sector will be deregulated and, if so, how deregulation will impact storage deployments currently being initiated by utilities and opportunities for utility ownership of storage assets.
5. Consider whether the inclusion of energy storage alternatives should be mandated in regulated utilities' integrated resource plans.
6. Re-evaluate and extend financial incentives provided to energy storage initiatives.
7. Determine if Arizona will join the California ISO or another RTO and how that might provide opportunities for energy storage procured or developed by the state's utilities can be used in wholesale transactions at the RTO level.

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